

### REMARKS

Applicant respectfully requests further examination and reconsideration in view of the above amendments and the arguments set forth below. Claims 1-48 were previously pending in this application. Within the Office Action, Claims 1-6, 13-17, 23-29, 35-41, 47 and 48 have been rejected and Claims 7-12, 18-22, 30-34 and 42-46 have been objected to. By the above amendment, Claims 1-8 and 10-48 have been amended. Accordingly, Claims 1-48 are currently pending.

Within the Office Action, Claims 1-6, 13-17, 23-29, 35-41, 47 and 48 have been rejected based on prior art, illustrated in applicant's Figure 1 of the present specification. As will be discussed in detail below, Claims 1-6, 13-17, 23-29, 35-41, 47 and 48 are all allowable over the prior art illustrated in Figure 1 because the operational amplifier of Figure 1 is a telescopic operational amplifier, not a grounded source operational amplifier, and the operational amplifier of Figure 1 does not include a biasing circuit and a dynamic current switching circuit.

#### **Rejections Under 35 U.S.C. § 102**

Within the Office Action, Claims 1-3, 5, 15, 25-27 and 37-39 have been rejected under 35 U.S.C. § 102(b) as being anticipated by prior art shown in Figure 1 of the present specification. The Applicant respectfully disagrees. As taught within the present specification, Figure 1 illustrates a telescopic Op-amp. [Present Specification, page 3, line 32] Figure 1 does not illustrate a *grounded source operational amplifier*. As further taught within the present specification, Figure 1 illustrates a biasing circuit within the telescopic Op-amp. [Present Specification, page 5, line 26 - page 6, line 8] The telescopic Op-amp of Figure 1 does not include a dynamic current switching circuit.

In contrast to the teachings within the background section of the present application and illustrated in Figure 1, the present invention includes a high-speed low-power dynamic current biased operational amplifier for use in switched capacitor circuits. The inventive operational amplifier includes a biasing circuit, a dynamic current switching circuit and a main amplifier core. As discussed within the specification, the operational amplifier has the advantage of minimizing settling time issues related to common-mode feed back, while employing a dynamic current switching circuit to reduce power dissipation. [Present Specification, [page 12, lines 24-28]

In contrast to a telescopic operational amplifier, the operational amplifier of Claim 1 comprises a grounded source operational amplifier circuit. In addition, independent Claim 1 comprises a dynamic current switching circuit coupled to the grounded source operational amplifier circuit, which is not shown in the Figure 1 prior art. Therefore, independent Claim 1 is allowable over the teachings of Figure 1.

Claims 2, 3 and 5 are all dependent on the independent Claim 1. Since independent Claim 1 is allowable over applicant's Figure 1, Claims 2, 3 and 5 are all also allowable as being dependent on an allowable base claim.

Similarly, applicant's Figure 1 prior art does not disclose or suggest elements recited in independent Claim 15. As discussed above, applicant's prior art of Figure 1 does not include Claim 15's combination of a main amplifier core circuit, a biasing circuit, and a dynamic current switching circuit. Furthermore, the Figure 1 prior art does not disclose or suggest the additional limitations recited in Claim 15, such as that the main amplifier core circuit includes an upper gain enhancement circuit including a first PMOS cascode, a second PMOS cascode, and AUXP operational amplifier, that the upper gain enhancement circuit maintains an upper gain bias voltage across a first PMOS current source and a second PMOS current source, and that the dynamic current switching circuit is configured to reduce power dissipation. For at least these reasons, the independent Claim 15 is allowable over applicant's Figure 1.

The independent Claim 25 is directed to an operational amplifier for use in a switched capacitor circuit. The operational amplifier of Claim 25 comprises a main amplifier core circuit including a first main leg and a second main leg in a branch of the main amplifier core circuit, a biasing circuit and a dynamic current switching circuit coupled to the main amplifier core circuit, wherein the dynamic current switching circuit is configured to reduce power dissipation in the operational amplifier circuit. As discussed above, applicant's Figure 1 does not include the combination of a main amplifier core circuit, a biasing circuit and a dynamic current switching circuit, or that the dynamic current switching circuit is configured to reduce power dissipation. For at least these reasons, the independent Claim 25 is allowable over the teachings of applicant's Figure 1.

Claims 26 and 27 are both dependent on the independent Claim 25. As described above, the independent Claim 25 is allowable over applicant's Figure 1. Accordingly, Claims 26 and 27 are both also allowable as being dependent on an allowable base claim.

The independent Claim 37 is directed to a method of processing a signal in an operational amplifier. The method of Claim 37 comprises amplifying the signal with a main amplifier core

circuit, the main amplifier core circuit including a first main leg and a second main leg in a branch of the main amplifier core circuit, biasing the signal with a biasing circuit and reducing power dissipation with a dynamic current switching circuit coupled to the main amplifier core circuit. As discussed above, applicant's Figure 1 does not illustrate the combination of amplifying the signal with a main amplifier core circuit, biasing the signal with a biasing circuit and reducing power dissipation with a dynamic current switching circuit. For at least these reasons, the independent Claim 37 is allowable over applicant's Figure 1.

Claims 38 and 39 are both dependent on the independent Claim 37. As described above, the independent Claim 37 is allowable over applicant's Figure 1. Accordingly, Claims 38 and 39 are both also allowable as being dependent on an allowable base claim.

#### **Rejections Under 35 U.S.C. § 103**

Within the Office Action, Claims 4, 6, 13, 14, 16, 17, 23, 24, 28, 29, 35, 36, 40, 41, 47 and 48 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over applicant's Figure 1. Applicant respectfully disagrees. Claims 4, 6, 13, and 14 are all dependent on the independent Claim 1. Claims 16, 17, 23, and 24 are all dependent on the independent Claim 15. Claims 28, 29, 35, and 36 are all dependent on the independent Claim 25. Claims 40, 41, 47, and 48 are all dependent on the independent Claim 37. As described above, the independent Claims 1, 15, 25, and 37 are all allowable over the teachings of applicant's Figure 1. Further, it would not be obvious to modify the circuit of Figure 1 to come up with the inventions of Claims 1, 15, 25, and 37. Accordingly, Claims 4, 6, 13, 14, 16, 17, 23, 24, 28, 29, 35, 36, 40, 41, 47 and 48 are all also allowable as being dependent on an allowable base claim.

#### **Allowable Subject Matter**

The Examiner has objected to Claims 7-12, 18-22, 30-34, and 42-46 as being dependent upon a rejected base claim, and he has remarked that these claims would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicant thanks the Examiner for this observation and respectfully declines to rewrite these claims in this paper because Applicant believes that the base and intervening claims are allowable as set forth above. Applicant respectfully maintains that Claims 7-12, 18-22, 30-34, and 42-46 are allowable as being dependent on an allowable base claim.



PATENT  
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For the reasons given above, Applicant respectfully submits that all of the pending claims are now in condition for allowance, and allowance at an early date would be greatly appreciated. If the Examiner should have any questions or comments, the Examiner is encouraged to call the undersigned at (408) 530-9700 to discuss the same so that any outstanding issues can be expeditiously resolved.

Respectfully submitted,  
HAVERSTOCK & OWENS LLP

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**CERTIFICATE OF MAILING (37 CFR § 1.8(a))**

I hereby certify that this paper (along with any referred to as being attached or enclosed) is being deposited with the U.S. Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to the: Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450

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